Monitoring, Maintenance and Adaptive Management Plan, Downey Farmstead Restoration

DRAFT DOCUMENT

Last Update: 10/25/13

Parameters, Performance Standards and Adaptive Management:

1) Vegetation Establishment. The City will monitor vegetation establishment according to standard protocols for a period of 10-years after initial plant installation. Installed woody native plants will be flagged at planting and again at the one-year monitoring (if necessary) to facilitate monitoring. Survival of plantings and percent native cover shall meet the following minimum performance standards:

    a. Year 1: Survival of native woody plantings shall be 100%, and planted herbaceous species will persist. Plants not surviving shall be replaced with the same or similar native species unless it is determined that site conditions are not suitable for the same or similar species. If the latter, planting zones shall be adjusted as needed and dead or dying plants replaced to the 100% level;

    b. Year 2: Survival of native woody plantings shall be at least 90% as above, and planted herbaceous species will persist. If not, replant to 100% level as above;

    c. Year 3: Percent aerial cover of native woody vegetation shall be at least 30%. In patches where herbaceous species were planted, at least 50% of species planted shall remain. If these standards are not met, replace dead plants with the same or similar species, adjust planting zones and adaptively manage as necessary;

    d. Year 5: Percent aerial cover of native woody vegetation shall be at least 50% as above. If not, adaptively manage as necessary.

    e. Year 7: Percent aerial cover of native woody vegetation (including volunteer species) shall be at least 60% as above. If not, adaptively manage as necessary.

    f. Year 10: Percent aerial cover of native woody vegetation (including volunteer species) shall be at least 70% as above. If not, adaptively manage as necessary.

g. Vegetation photopoints will be established and photographs will be taken in similar directions under similar lighting conditions from these points at least yearly during vegetation monitoring.

2) Invasive Species: The City will monitor invasive species cover according to standard protocols for a period of 10-years after initial plant installation. Non-native, invasive plant cover shall not exceed the following minimum performance standards:

   a. Year 1, 2, 3: No more than 20% cover of non-native, invasive species shall be present on-site. Weeding and disposal of all non-native species will be performed at least monthly during the growing season during Years 1 & 2, and at least monthly during year 3 if non-native, invasive species cover exceeds 10% during Year 2 monitoring.

   b. Year 5, 7 & 10: Thorough weeding will occur in April, June and September if monitoring reveals that aerial cover of non-native, invasive weeds exceeds 10%.

3) Hydrology / Fish Access: The City will monitor water levels in the side channels, especially during the January to June Chinook juvenile outmigration period to ensure that inundation/connectivity duration, frequency and timing is similar to design parameters. Specific performance parameters follow:

   a. With elevations of three of the four side channel inlets set at 22, 21 and 20 feet, it is expected that flows above 800-1000 CFS will flow-through the side channels. Based on analysis of Green River flows at Auburn, it is expected that 1,000 CFS flows will occur between January and June approximately 150 days each year. The City will monitor water levels and inundation frequency and timing within the side channels during each monitoring year (Year 1, 2, 3, 5, 7 & 10) after construction to ensure that constructed conditions for juvenile salmon approximate those modeled.

   b. With an outlet elevation of 18.0 feet, it is expected that backwater conditions will be present in the lower channel for most of the year. Lower channel backwater conditions will also be monitored during each of the monitoring years.

   c. Sedimentation and scour – as-built drawings will be prepared immediately after completion of construction to document conditions. These as-builts will then be compared with topographic surveys of areas that may have experienced deposition or erosion (identified with photos) completed in years 3, 5 and again in year 10. If sediment build-up blocks or significantly affects fish access to channels, the City will explore options to

restore fish access including, but not limited to: i) Excavation of blocking sediment and/or vegetation; ii) Altering channel hydraulics with large-wood or the like to encourage sediment movement.

d. If side channel inundation is less than modeled/desired conditions by 20% or more (i.e. 150 days per year of inundation between January 1 and June 30) at year 5 monitoring (as determined by analysis of water levels), the City will explore options to change side channel flow-through conditions. These may include altering existing engineered log jam configurations, adding additional large wood, and/or changing channel geometry or other parameters.

4) Fish Use: The City will monitor fish-use in the new channel (when feasible) focusing especially on juvenile Chinook use within outmigration periods (January – June). The preferred fish-use survey method will be snorkel surveys of the channel when flows are less than ~1,500 CFS (at the gage at Auburn) and visibility is good. Ideally, surveys would occur during the first week in March and the first week in June when the bimodal outmigrant Chinook peaks typically occur. However, it is likely, especially during March, that typical Green River flows will make fish-use surveys too dangerous. Snorkel surveys will be conducted when possible, and conditions and fish-use will be compared with the Riverview Park channel, a 700 LF side-channel completed in 2012 with similar goals.

The City will submit monitoring reports to regulatory agencies in years 1, 2, 3, 5, 7 & 10. These reports will detail monitoring methods, results and maintenance and adaptive management actions taken to respond to conditions for each of the four parameters detailed above.